The following is a complete listing of the claims, and replaces all earlier version and listings.

Claims 1. - 11. (canceled).

12.   (currently amended): An image processing method which maps a first color gamut into a second color gamut, comprising the steps of:

setting first sample points on a surface of the first color gamut, and second sample points in the first color gamut;

~~obtaining third sample points corresponding to the first sample points, and fourth sample points corresponding to the second sample points, wherein the third sample points and the fourth sample points are in the second color gamut;~~

obtaining third sample points by mapping the first sample points into the second color gamut, and obtaining fourth sample points by mapping the second sample points into the second color gamut;

setting surface gradation lines based on the first sample points and internal gradation lines based on the second sample points;

mapping the surface gradation lines based on the third sample points, and mapping the internal gradation lines based on the fourth sample points; [[and]]

~~mapping an input color into an output color in the second color gamut by using the mapped surface gradation lines and the mapped internal gradation lines;~~

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calculating a relative position of an input color to the surface gradation lines or the internal gradation lines; and

calculating an output color from the mapped surface gradation lines or the mapped internal gradation lines, based on the relative position,

wherein the surface gradation lines and the internal gradation lines each indicate a locus of color change in the first color gamut, and the mapped surface gradation lines and the mapped internal gradation lines each indicate a locus of color change in the second color gamut[[, and]]

~~wherein said step of mapping the input color into the output color in the second gamut includes calculating the output color from the mapped surface gradation lines and the mapped internal gradation lines, based on a physical relationship of the input color, the surface gradation lines and the internal gradation lines.~~

13.   (previously presented): A method according to Claim 12, wherein the surface, internal, mapped surface and mapped internal gradation lines are obtained by using at least one of a B-spline curve, a rational B-spline curve, a Bézier curve, and a one- or more-dimensional spline curve.

14.   (previously presented): A method according to Claim 12, wherein the first sample points are located on six faces of an R (red) face, a G (green) face, a B (blue) face, a C (cyan) face, an M (magenta) face and a Y (yellow) face in the first color gamut.

15.   (previously presented): A method according to Claim 12, wherein the mapping of the surface and internal gradation lines to the second color gamut includes two-dimensional mapping on a lightness-chroma plane according to the first color gamut and the second color gamut, and adjustment of a hue component.

16.   (currently amended): An image processing apparatus which maps a first color gamut into a second color gamut, comprising:

a first sample point setting unit adapted to set first sample points on a surface of the first color gamut and second sample points in the first color gamut;

an obtaining unit adapted to ~~obtain third sample points corresponding to the first sample points, and fourth sample points corresponding to the second sample points, wherein the third sample points and the fourth sample points are in the second color gamut~~ obtain third sample points by mapping the first sample points into the second color gamut, and obtaining fourth sample points by mapping the second sample points into the second color gamut;

a gradation line setting unit adapted to set surface gradation lines based on the first sample points and internal gradation lines based on the second sample points;

a gradation line mapping unit adapted to map the surface gradation lines based on the third sample points, and mapping the internal gradation lines based on the fourth sample points; [[and]]

~~an input color mapping unit adapted to map an input color into an output color in the second color gamut by using the mapped surface gradation lines and the mapped internal gradation lines~~

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a calculating unit, for calculating a relative position of an input color to the surface gradation lines or the internal gradation lines; and

a calculating unit, for calculating an output color from the mapped surface gradation lines or the mapped internal gradation lines, based on the relative position,

wherein the surface gradation lines and the internal gradation lines each indicate a locus of color change in the first color gamut, and the mapped surface gradation lines and the mapped internal gradation lines each indicate a locus of color change in the second color gamut[[, and]]

~~wherein said input color mapping unit calculates the output color from the mapped surface gradation lines and the mapped internal gradation lines, based on a physical relationship of the input color, the surface gradation lines and the internal gradation lines.~~

17.   (currently amended): A storage medium which computer-readably stores a program to cause a computer to execute an image processing method which maps a first color gamut into a second color gamut, said method comprising the steps of:

setting first sample points on a surface of the first color gamut, and second sample points in the first color gamut;

~~obtaining third sample points corresponding to the first sample points, and fourth sample points corresponding to the second sample points, wherein the third sample points and the fourth sample points are in the second color gamut;~~

obtaining third sample points by mapping the first sample points into the second color gamut, and obtaining fourth sample points by mapping the second sample points into the second color gamut;

setting surface gradation lines based on the first sample points and internal gradation lines based on the second sample points;

mapping the surface gradation lines based on the third sample points, and mapping the internal gradation lines based on the fourth sample points; [[and]]

~~mapping an input color into an output color in the second color gamut by using the mapped surface gradation lines and the mapped internal gradation lines;~~

calculating a relative position of an input color to the surface gradation lines or the internal gradation lines; and

calculating an output color from the mapped surface gradation lines or the mapped internal gradation lines, based on the relative position,

wherein the surface gradation lines and the internal gradation lines each indicate a locus of color change in the first color gamut, and the mapped surface gradation lines and the mapped internal gradation lines each indicate a locus of color change in the second color gamut[[, and]]

~~wherein said step of mapping the input color into the output color in the second gamut includes calculating the output color from the mapped surface gradation lines and the mapped internal gradation lines, based on a physical relationship of the input color, the surface gradation lines and the internal gradation lines.~~

18. (currently amended): An image processing method according to Claim 12, wherein the ~~physical relationship~~ <u>relative position</u> is defined by a ratio of internal division.

19. (currently amended): An image processing method according to Claim 12, wherein the ~~physical relationship~~ <u>relative position</u> is defined by an angle ratio.

20. (new): An image processing method which maps a first color gamut into a second color gamut, the first color gamut having a surface and having an interior contained entirely within the surface, and the second color gamut having a surface and having an interior contained entirely within the surface of the second color gamut, said method comprising the steps of:

setting a set consisting of a first predetermined number of first sample points on the surface of the first color gamut, and a set consisting of a second predetermined number of second sample points in the interior of the first color gamut, where the second predetermined number may be either equal to or different from the first predetermined number;

obtaining third sample points corresponding to respective ones of the first sample points, and fourth sample points corresponding to respective ones of the second sample points, wherein the third sample points and the fourth sample points are in the second color gamut, and the fourth sample points are in the interior of the second color gamut;

setting first surface gradation lines based on the first sample points and first internal gradation lines based on the second sample points, the first surface gradation lines each lying entirely on the surface of the first color gamut and the first internal gradation lines each containing points in the interior of the first color gamut, wherein the first surface gradation lines and the first internal gradation lines each indicate a respective locus of color change in the first color gamut;

mapping the first surface gradation lines to second surface gradation lines that are based on the third sample points, and mapping the first internal gradation lines to second internal gradation lines that are based on the fourth sample points and that lie in the interior of the second color gamut, wherein the second surface gradation lines and the second internal gradation lines each indicate a respective locus of color change in the second color gamut; and

mapping an input color into an output color in the second color gamut by using the second surface gradation lines and the second internal gradation lines,

wherein said step of mapping the input color into the output color in the second gamut includes calculating the output color from the second surface gradation lines and the second internal gradation lines, based on the input color and its location in the first color gamut relative to at least one gradation line from among the first surface gradation lines and the first internal gradation lines.